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IN THE U.S. PATENT AND TRADEMARK OFFICE

**In re patent application of**

William R. Reohr et al.

**Serial No.:** 09/313,261

**Group Art Unit:** 2731

**Filed:** May 18, 1999

**Examiner:** Unassigned

**For:** SYNCHRONOUS BI-DIRECTIONAL DATA TRANSFER HAVING  
INCREASED BANDWIDTH AND SCAN TEST FEATURES

Assistant Commissioner for Patents  
Washington, D.C. 20231

**SUBMISSION OF FORMAL DRAWINGS**

Sir:

Submitted herewith are twenty-two (22) sheets of formal drawings comprising figures 1-15 for the above-identified patent application. Please substitute the formal drawings for the drawings which were filed with the application.

Respectfully submitted,

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CSMA / CID

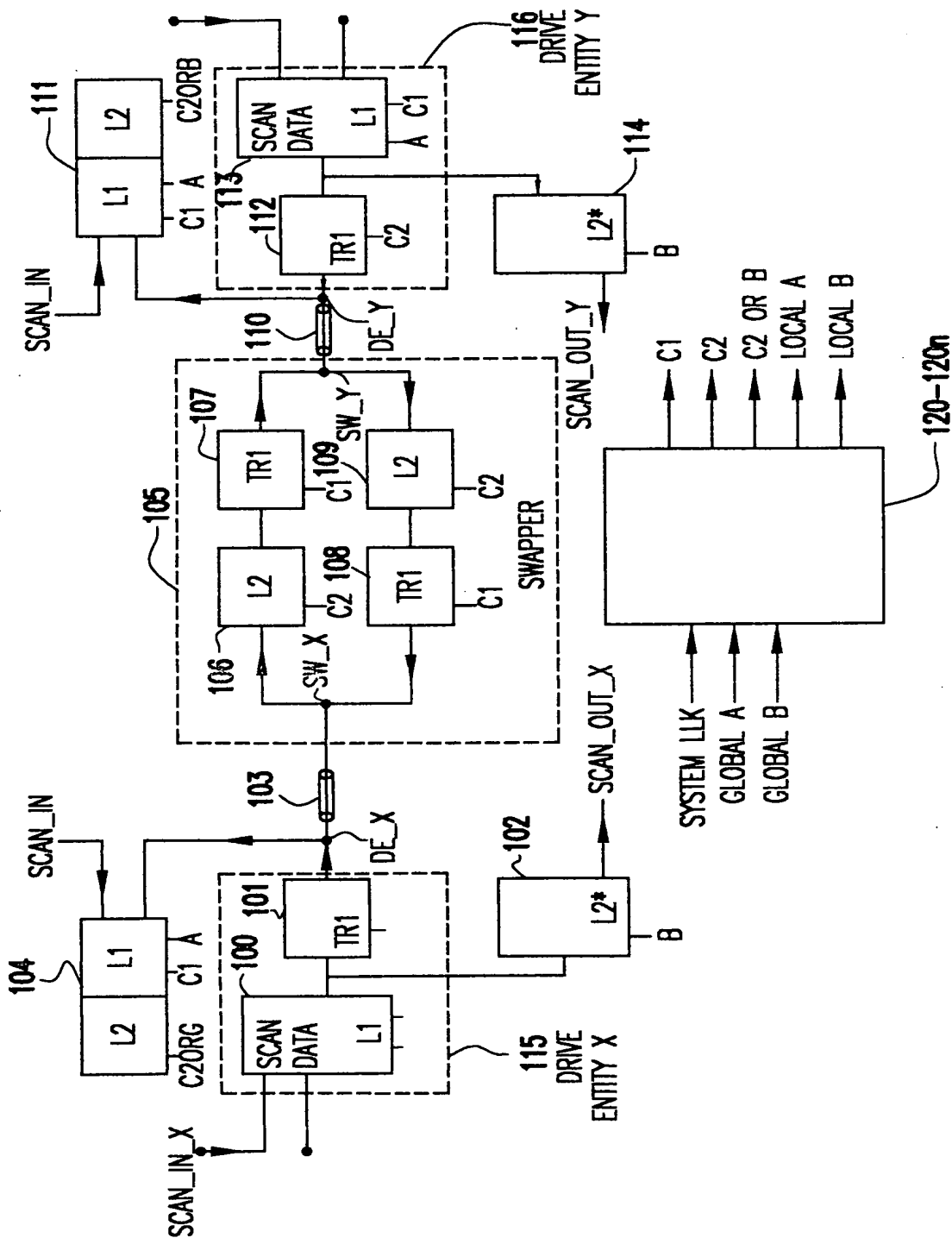


FIG. 1A

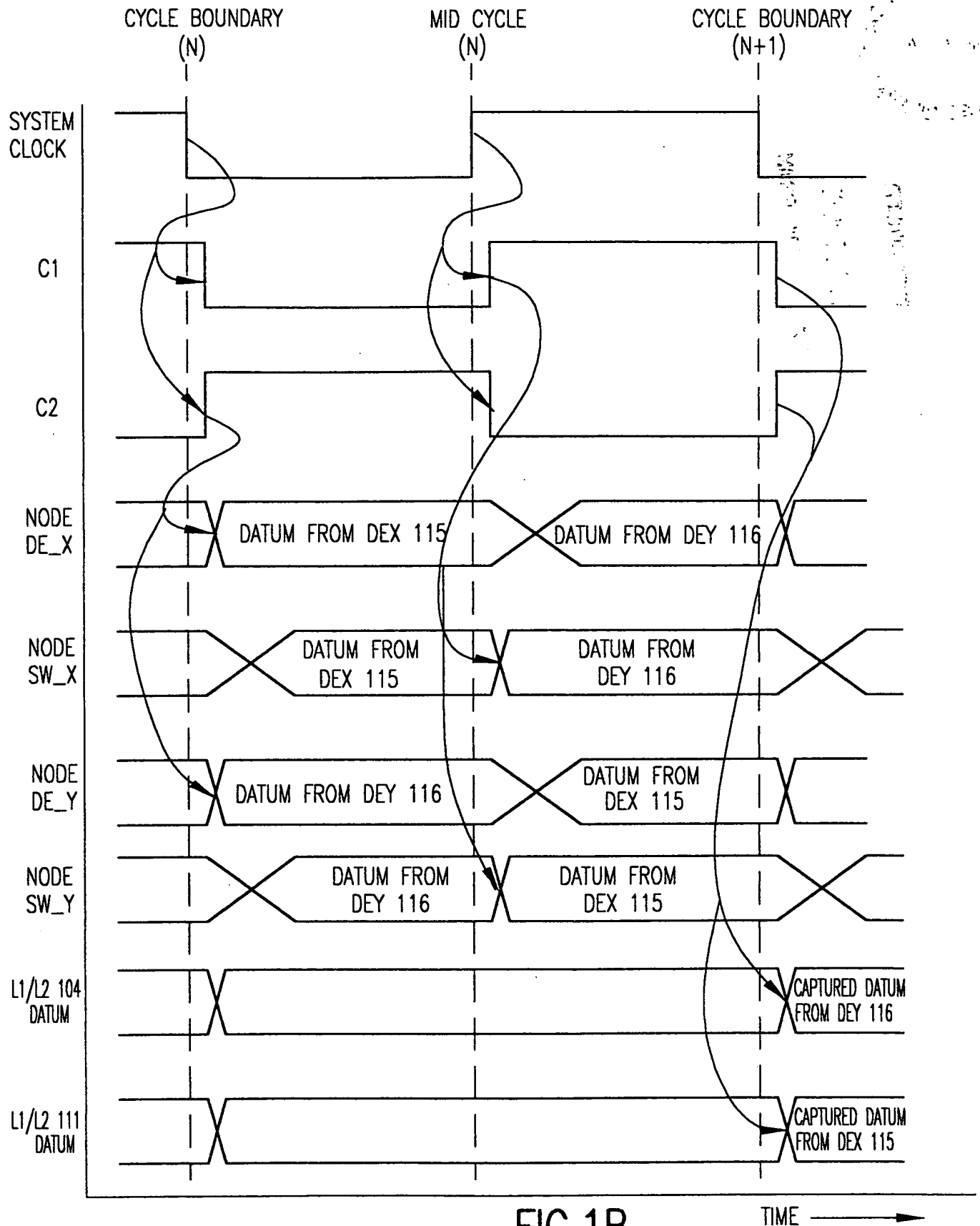


FIG.1B

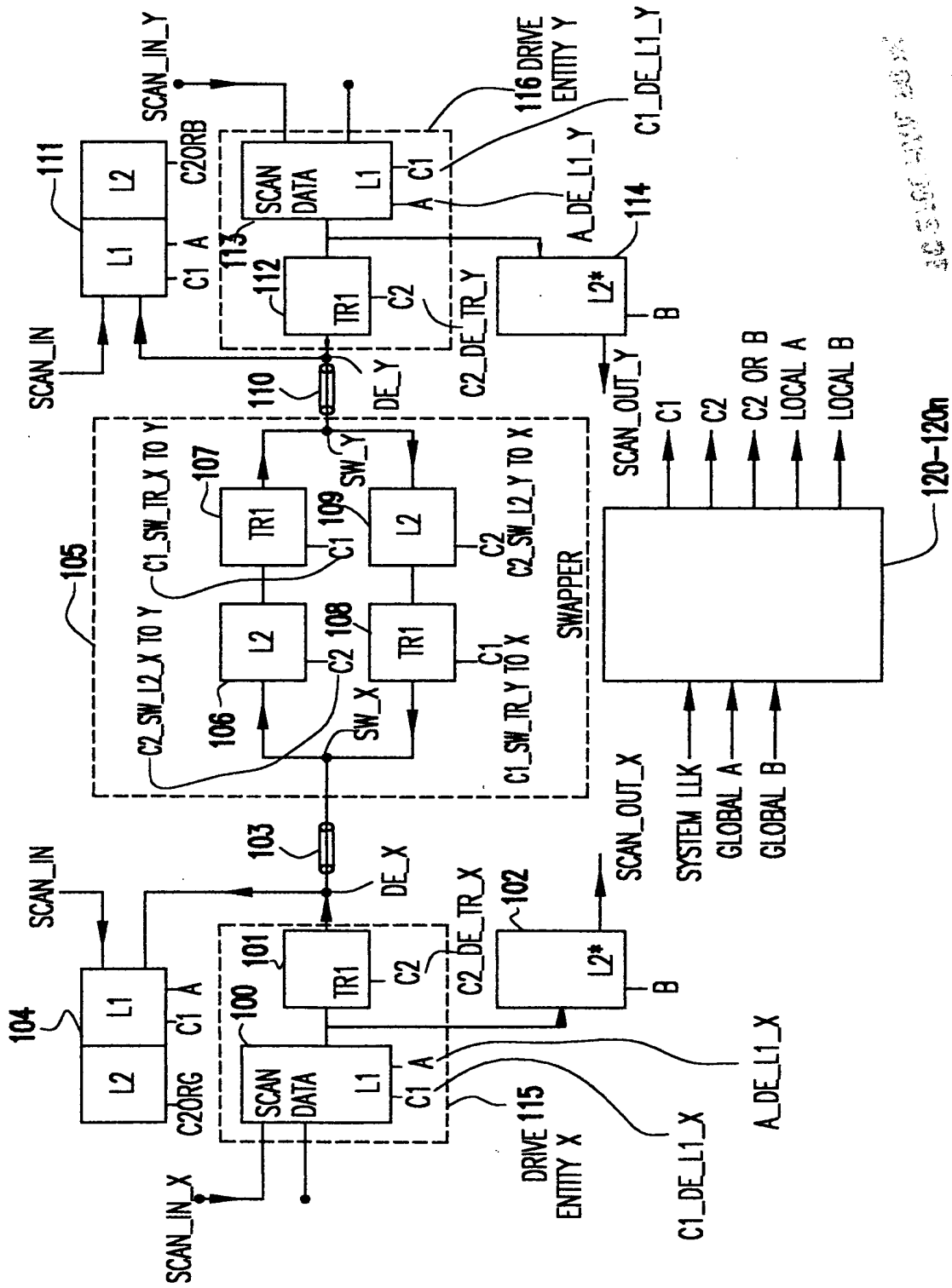


FIG.1C

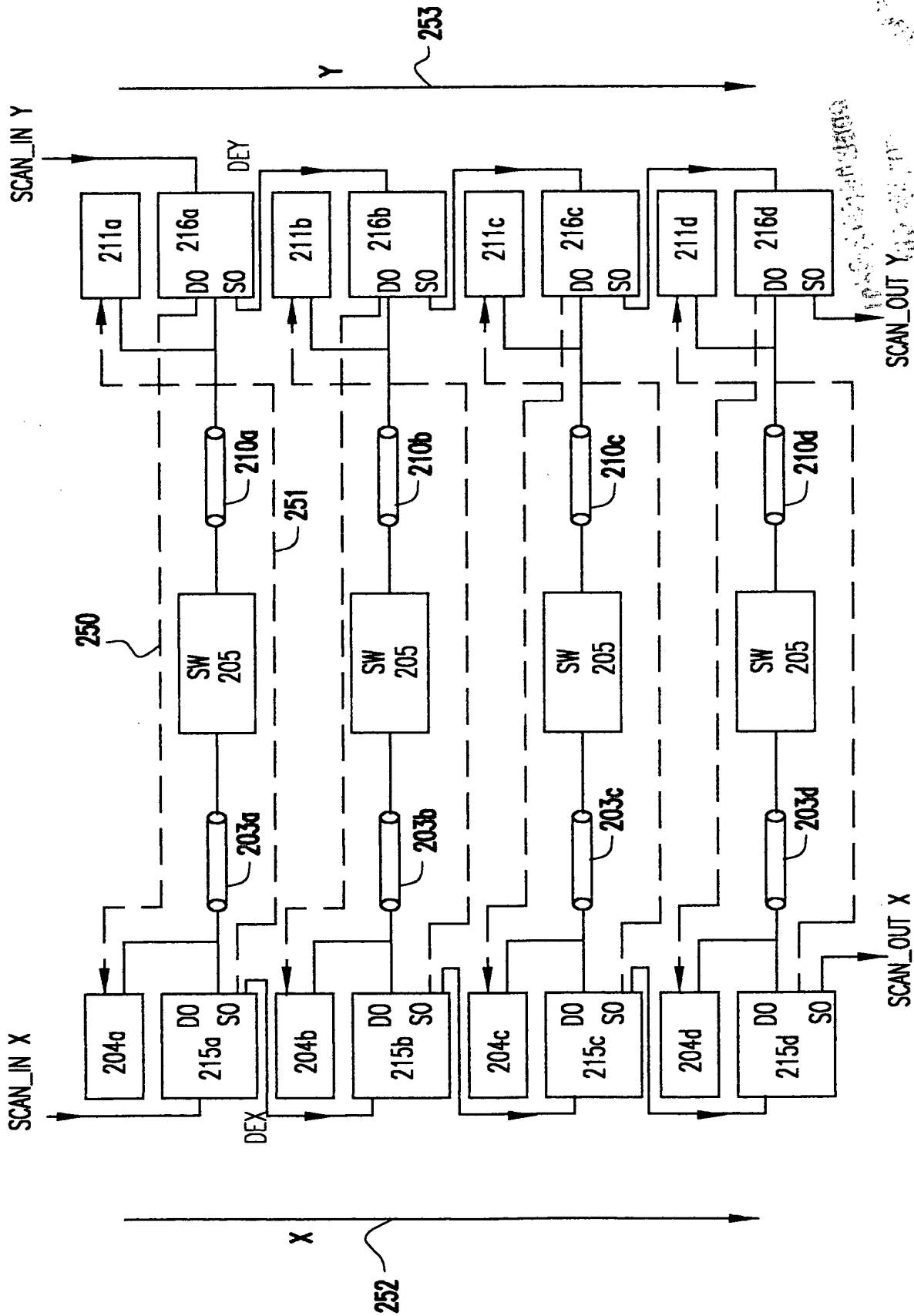


FIG. 2A



	SCAN MODE	SYSTEM MODE & TEST MODE
C1_DE_L1_Y		E
A_DE_L1_Y	E	
C2_DE_TR_Y		E
C1_SW_TR_YtoX		E
C2_SW_L2_YtoX		E
C1_SW_TR_XtoY		E
C2_SW_L2_XtoY		E
C2_DE_TR_X		E
A_DE_L1_X	E	
C1_DE_L1_X		E
C2		E
C1		E
B	E	
A	E	

E- ENABLED

FIG.2B

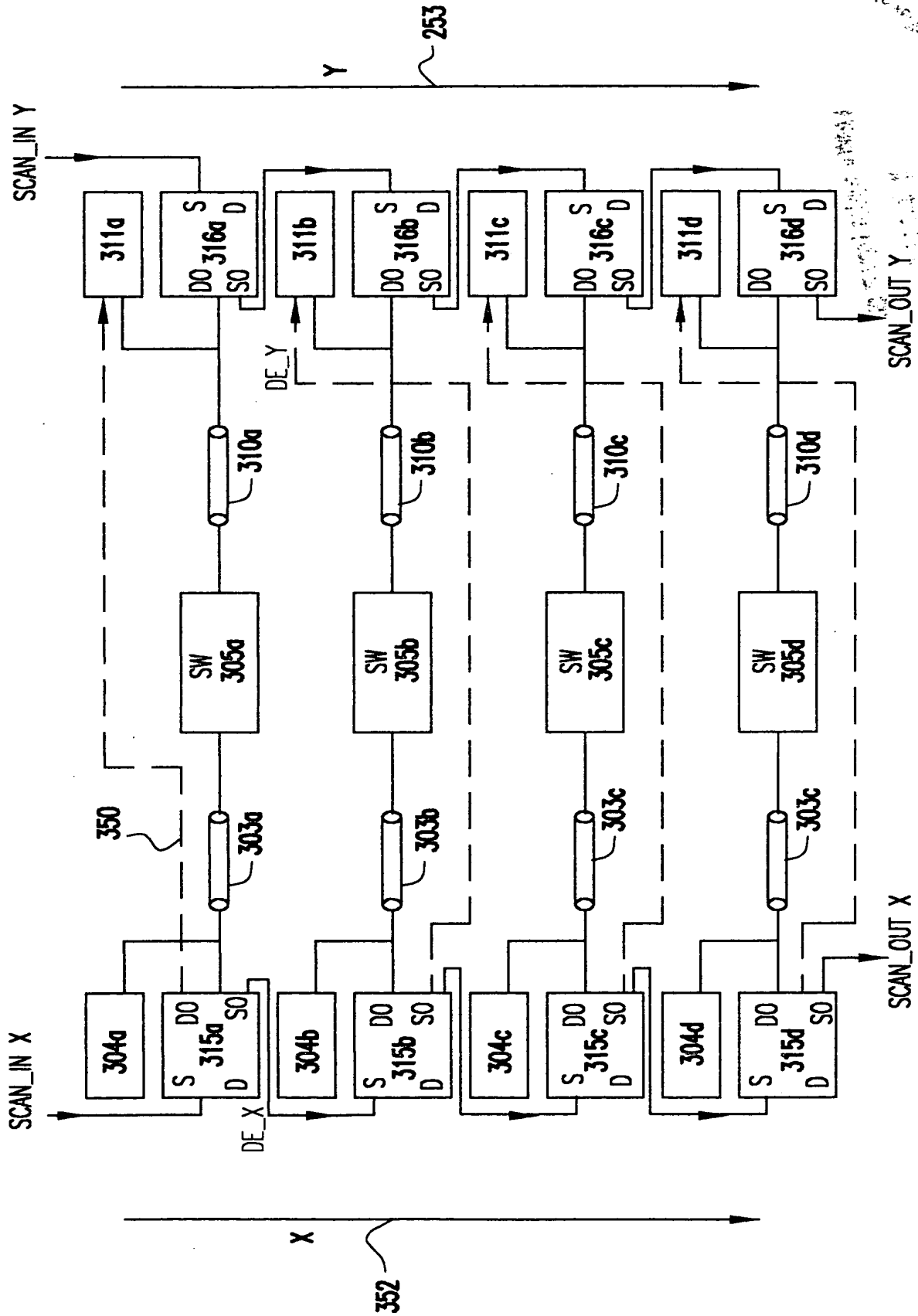
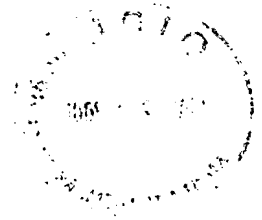


FIG.3A



	SCAN MODE &	TEST MODE	SYSTEM MODE
C1_DE_L1_Y		E	E
A_DE_L1_Y	E		
C2_DE_TR_Y			E
C1_SW_TR_YtoX			E
C2_SW_L2_YtoX		X	E
C1_SW_TR_XtoY		ON	E
C2_SW_L2_XtoY		E	E
C2_DE_TR_X		ON	E
A_DE_L1_X	E		
C1_DE_L1_X		E	E
C2		E	E
C1		E	E
B	E		
A	E		

E- ENABLED

FIG.3B



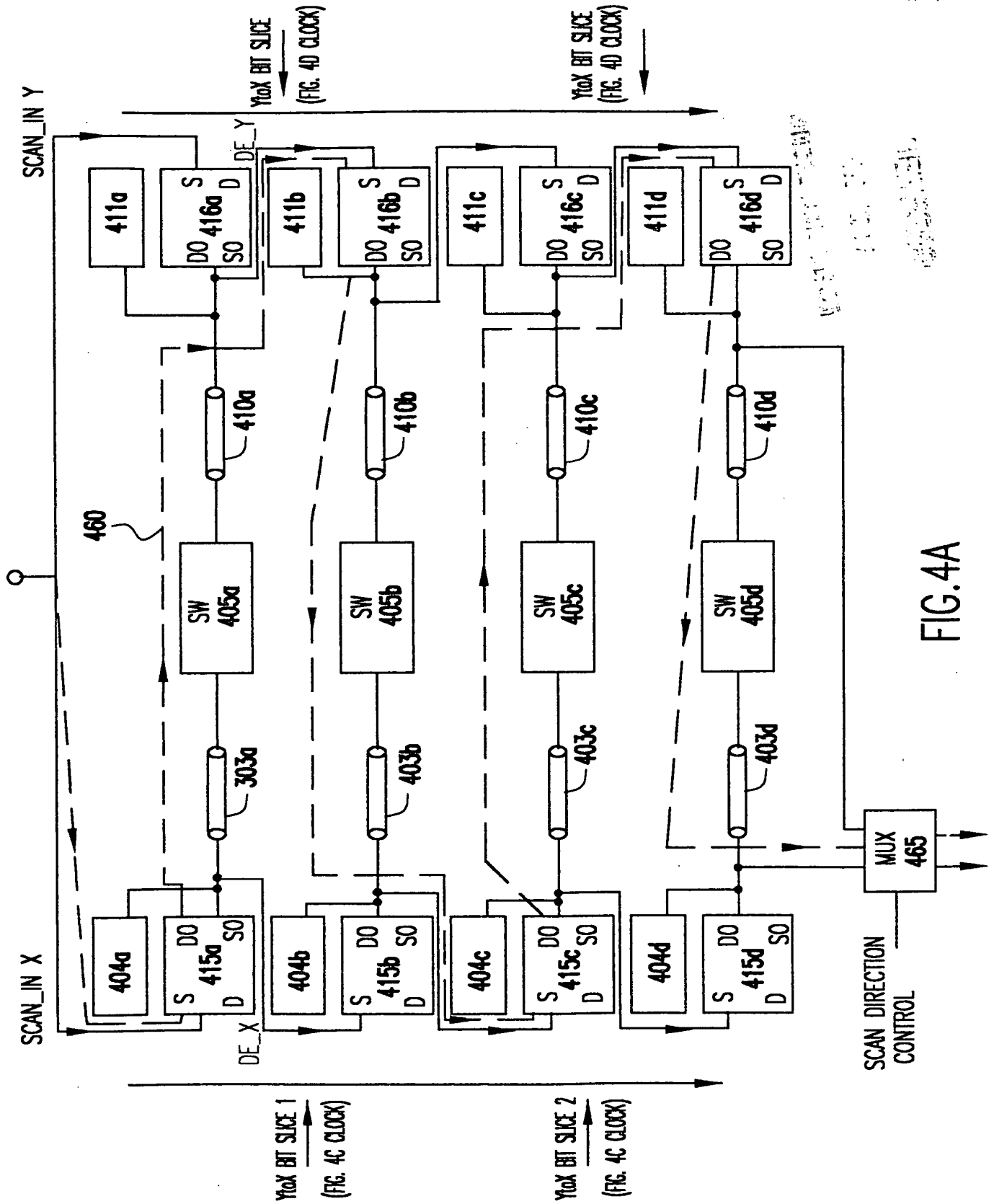


FIG. 4A

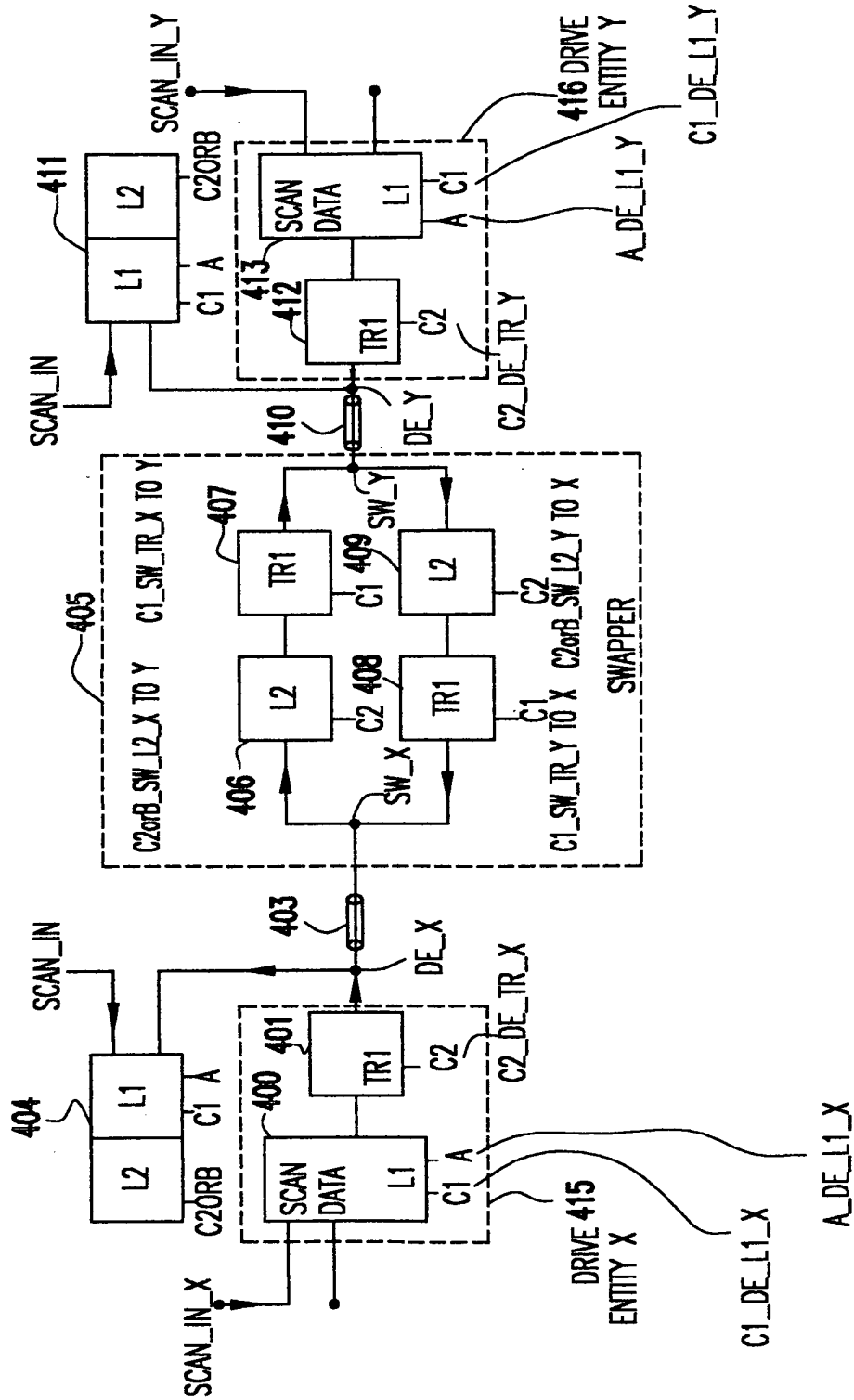
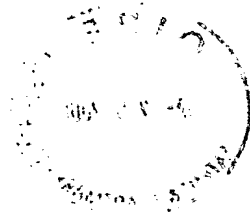


FIG. 4B

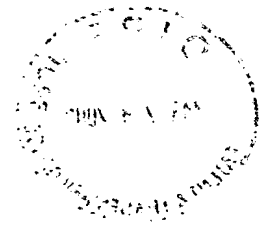
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	COMBINED SCAN MODE & TEST MODE	SYSTEM MODE
C1_DE_L1_Y	X	E
A_DE_L1_Y	X	
C2_DE_TR_Y	OFF	E
C1_SW_TR_YtoX	OFF	E
C2orB_SW_L2_YtoX	X	E (C2 CLOCK)
C1_SW_TR_XtoY	ON	E
C2orB_SW_L2_XtoY	E (B CLOCK)	E (C2 CLOCK)
C2_DE_TR_X	ON	E
A_DE_L1_X	E	
C1_DE_L1_X	OFF	E
C2		E
C1	E	E
B	E	
A	E	

E- ENABLED

FIG.4C



	COMBINED SCAN MODE & TEST MODE	SYSTEM MODE
C1_DE_L1_Y	OFF	E
A_DE_L1_Y	E	
C2_DE_TR_Y	ON	E
C1_SW_TR_YtoX	ON	E
C2orB_SW_L2_YtoX	E (B CLOCK)	E (C2 CLOCK)
C1_SW_TR_XtoY	OFF	E
C2orB_SW_L2_XtoY	X	E (C2 CLOCK)
C2_DE_TR_X	OFF	E
A_DE_L1_X	X	
C1_DE_L1_X	X	E
C2		E
C1	E	E
B	E	
A	E	

E- ENABLED

FIG.4D

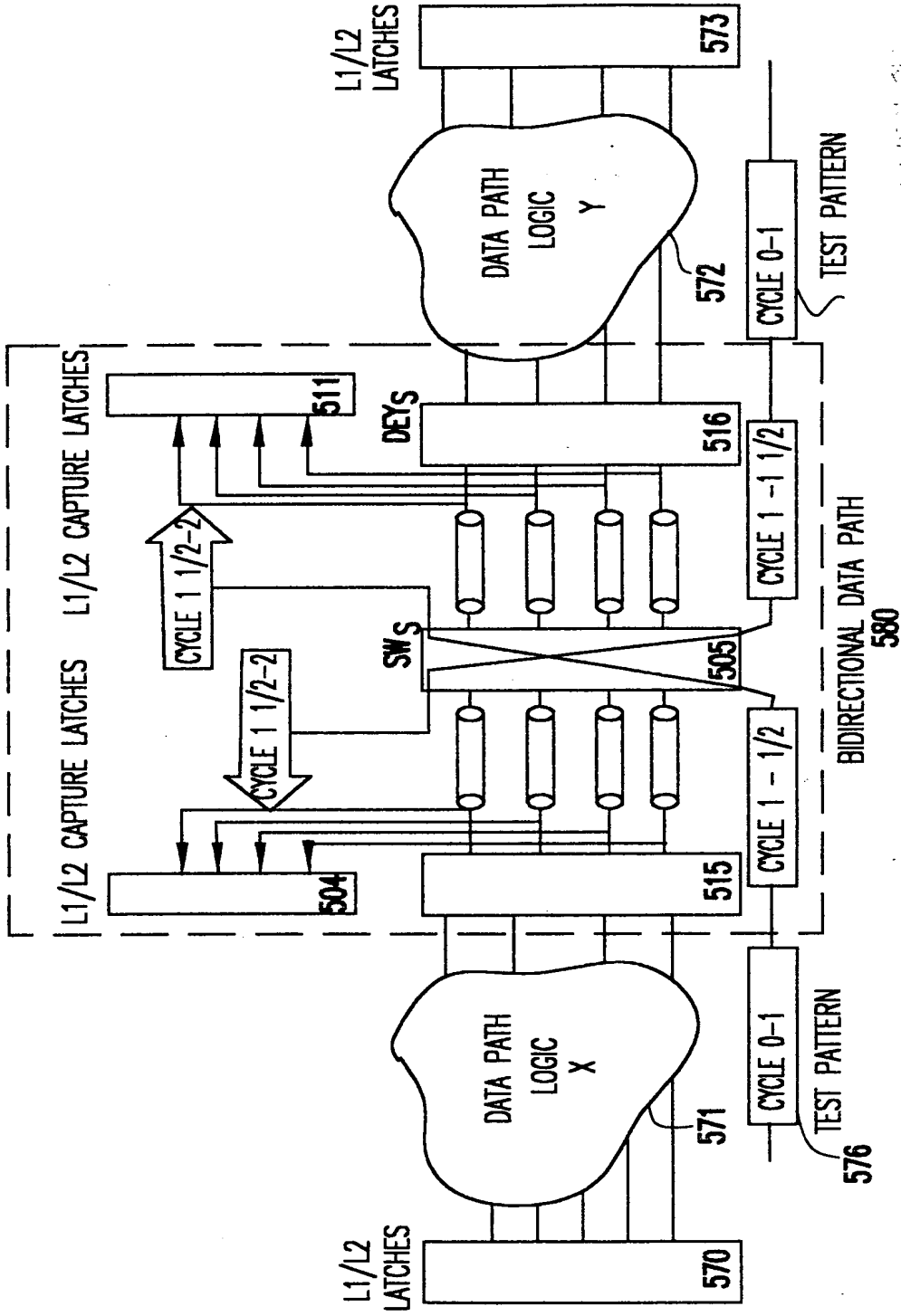


FIG. 5

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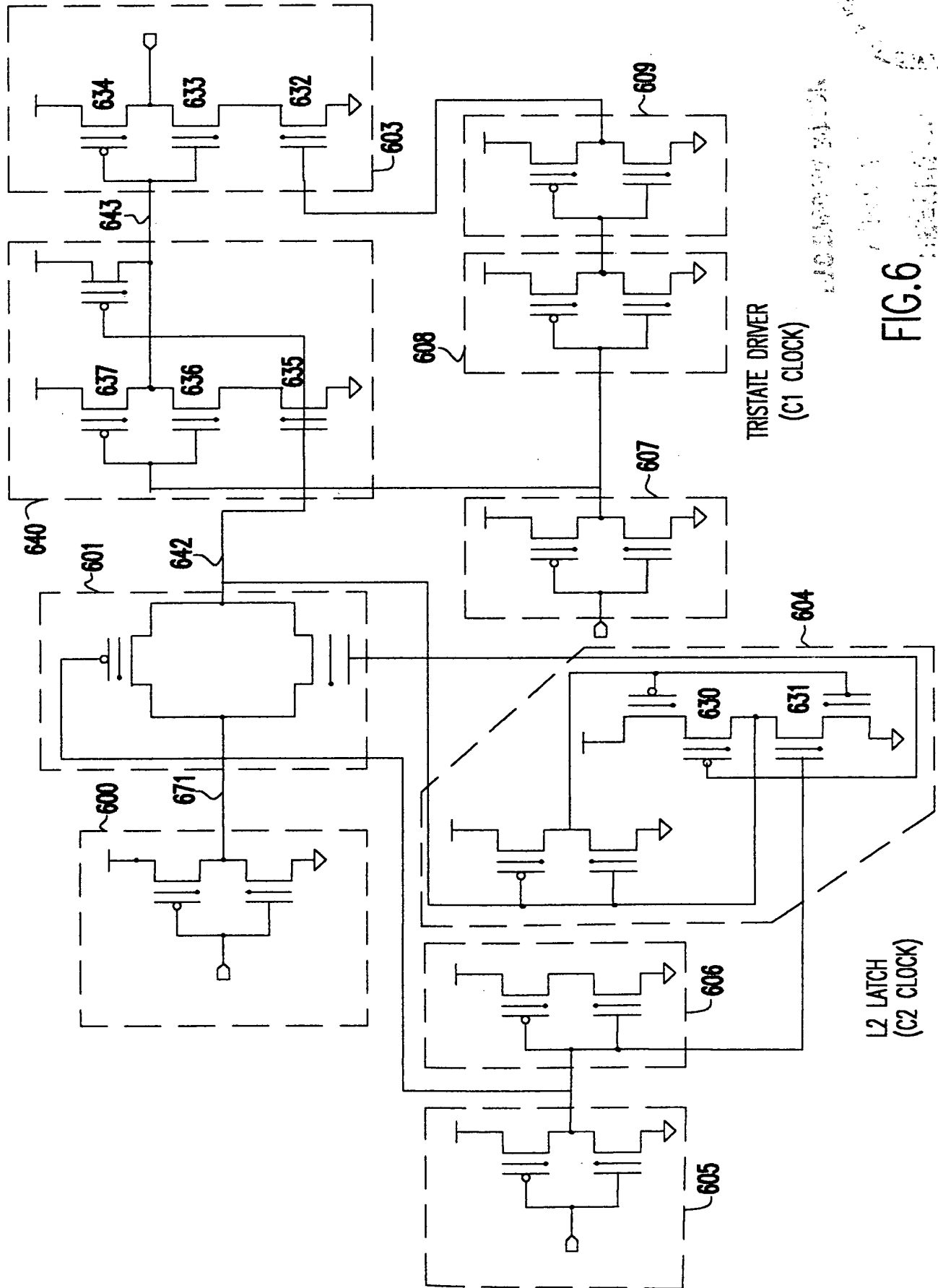


FIG. 6

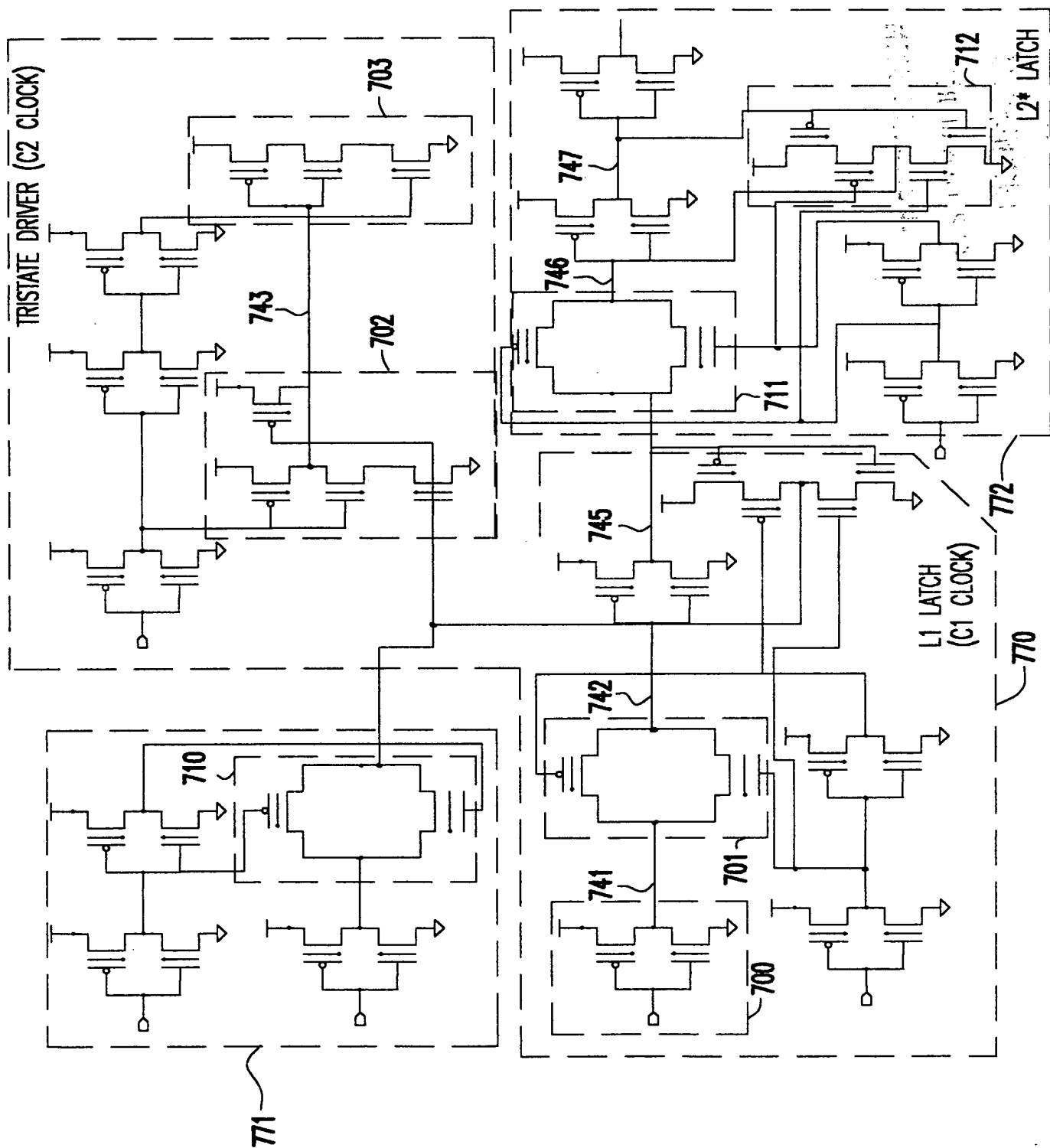
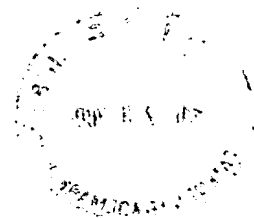


FIG. 7

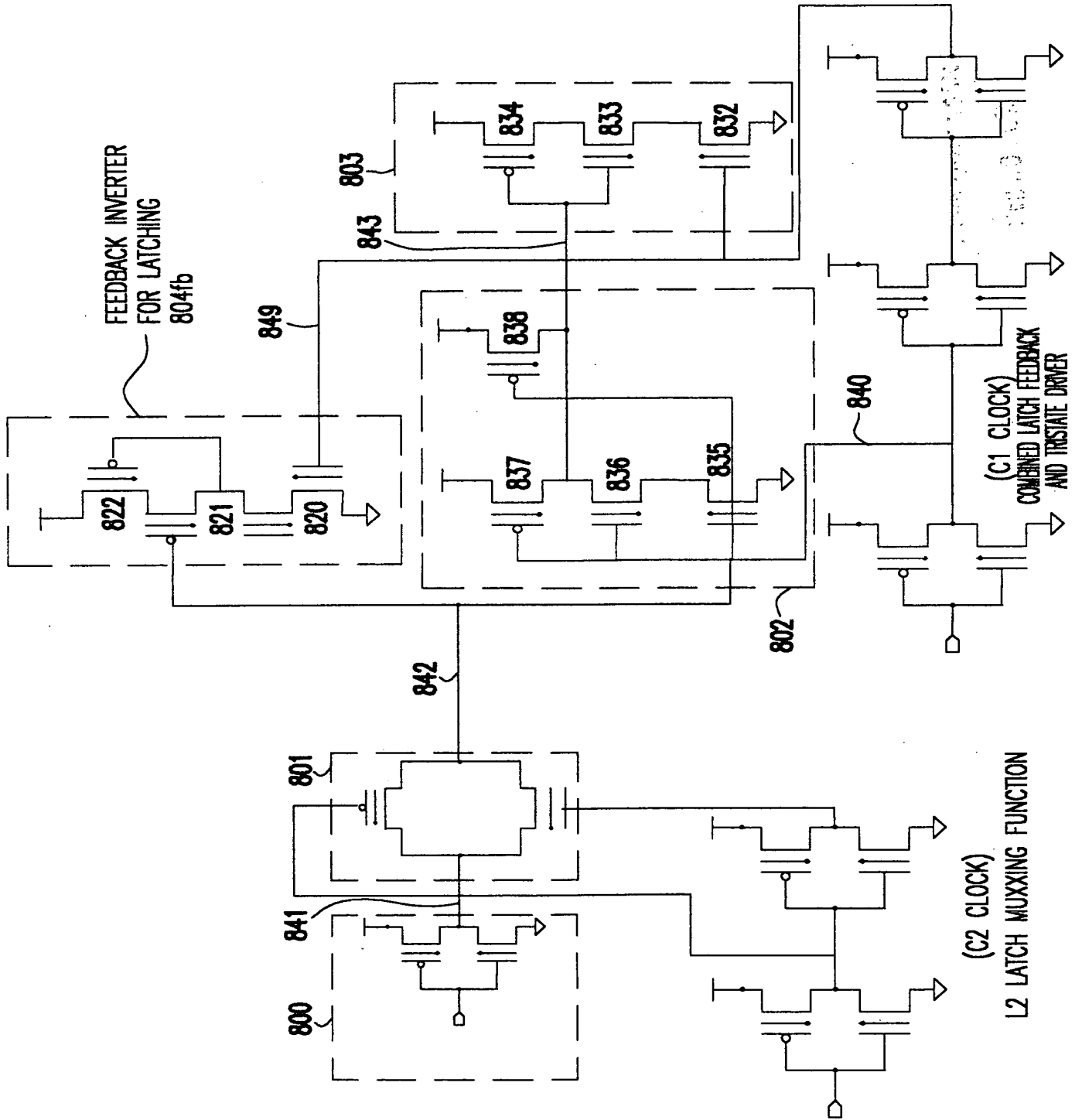
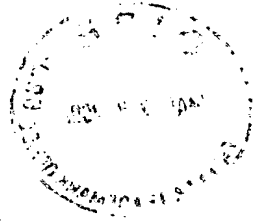


FIG. 8



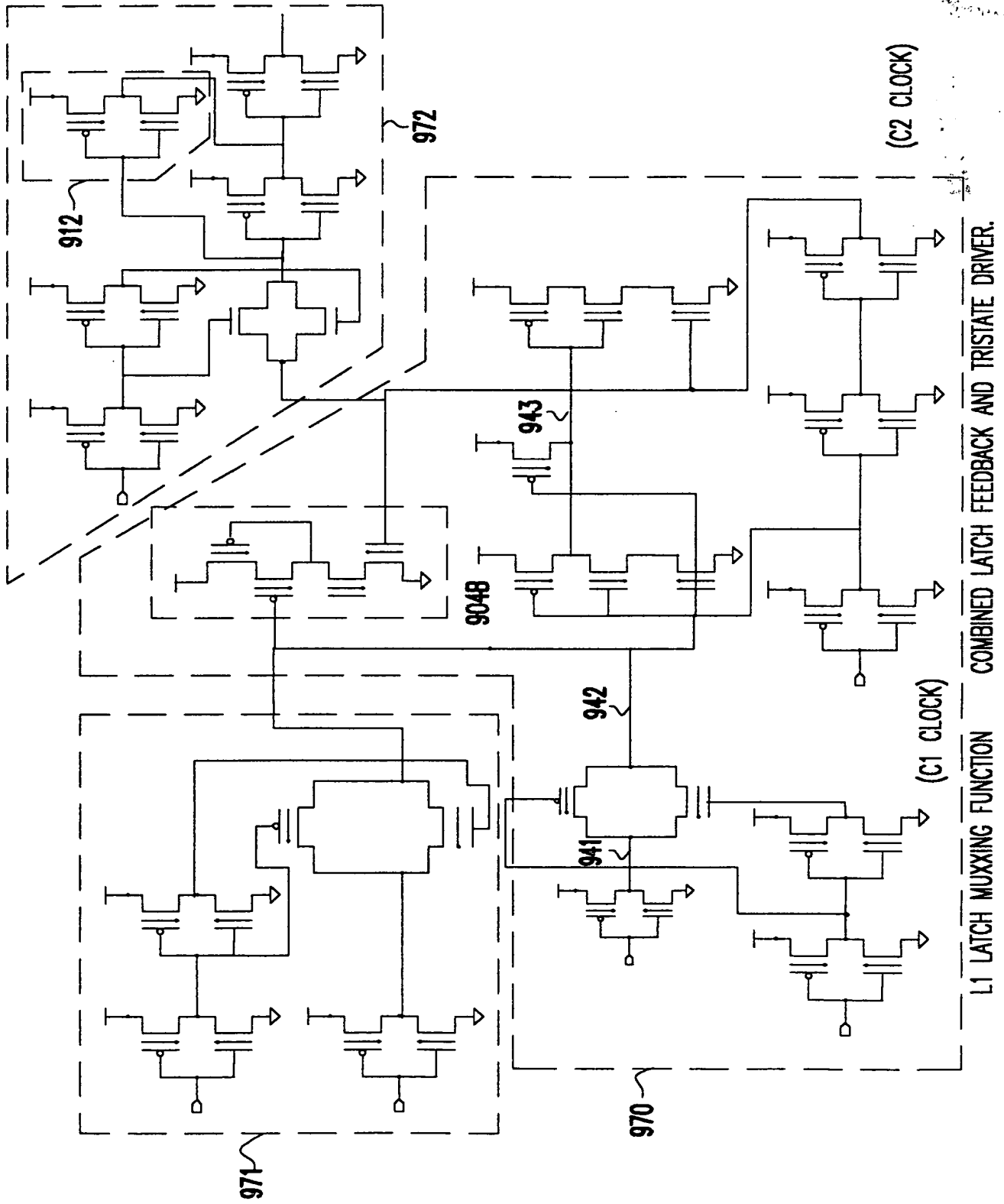


FIG. 9

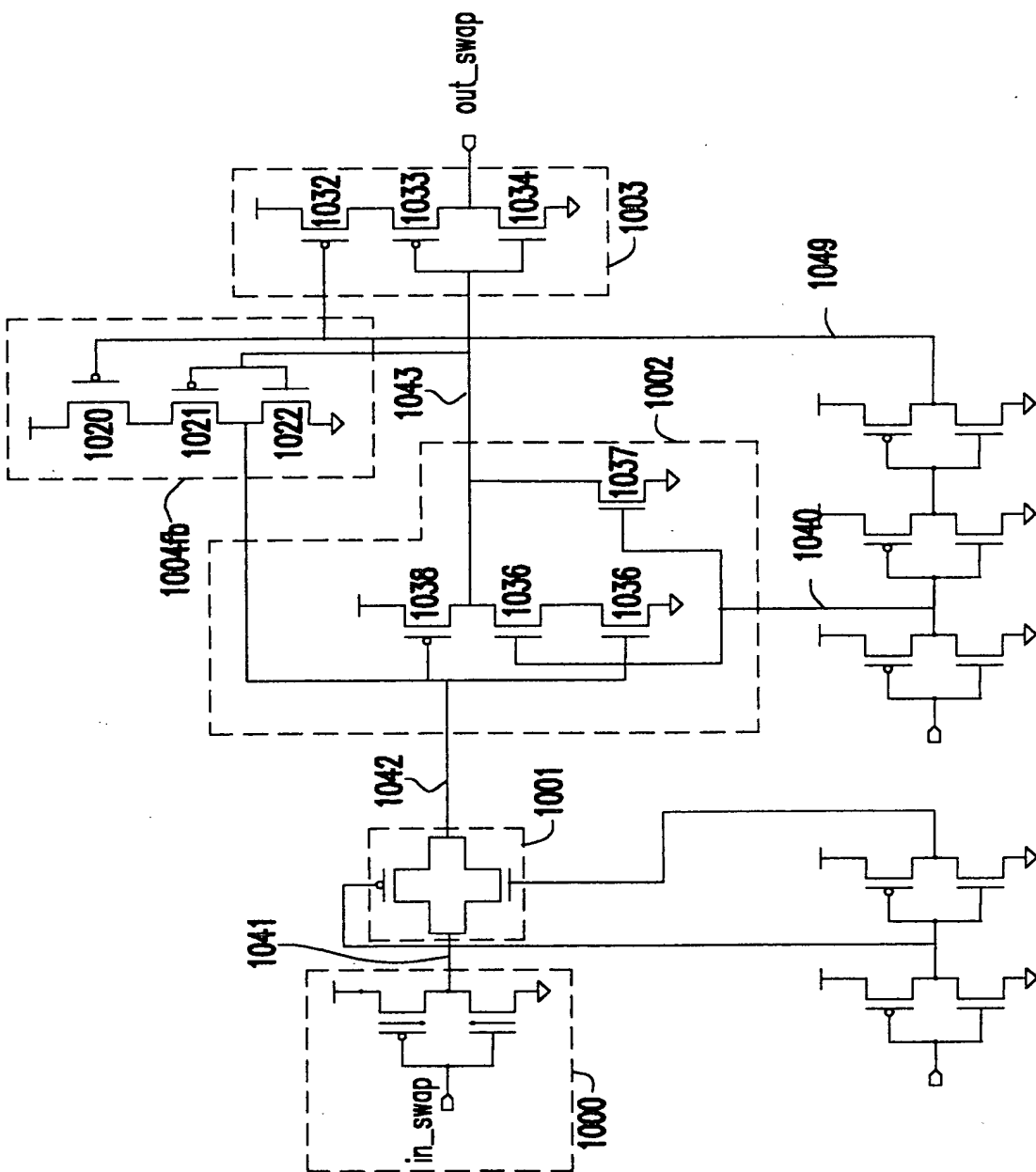


FIG.10

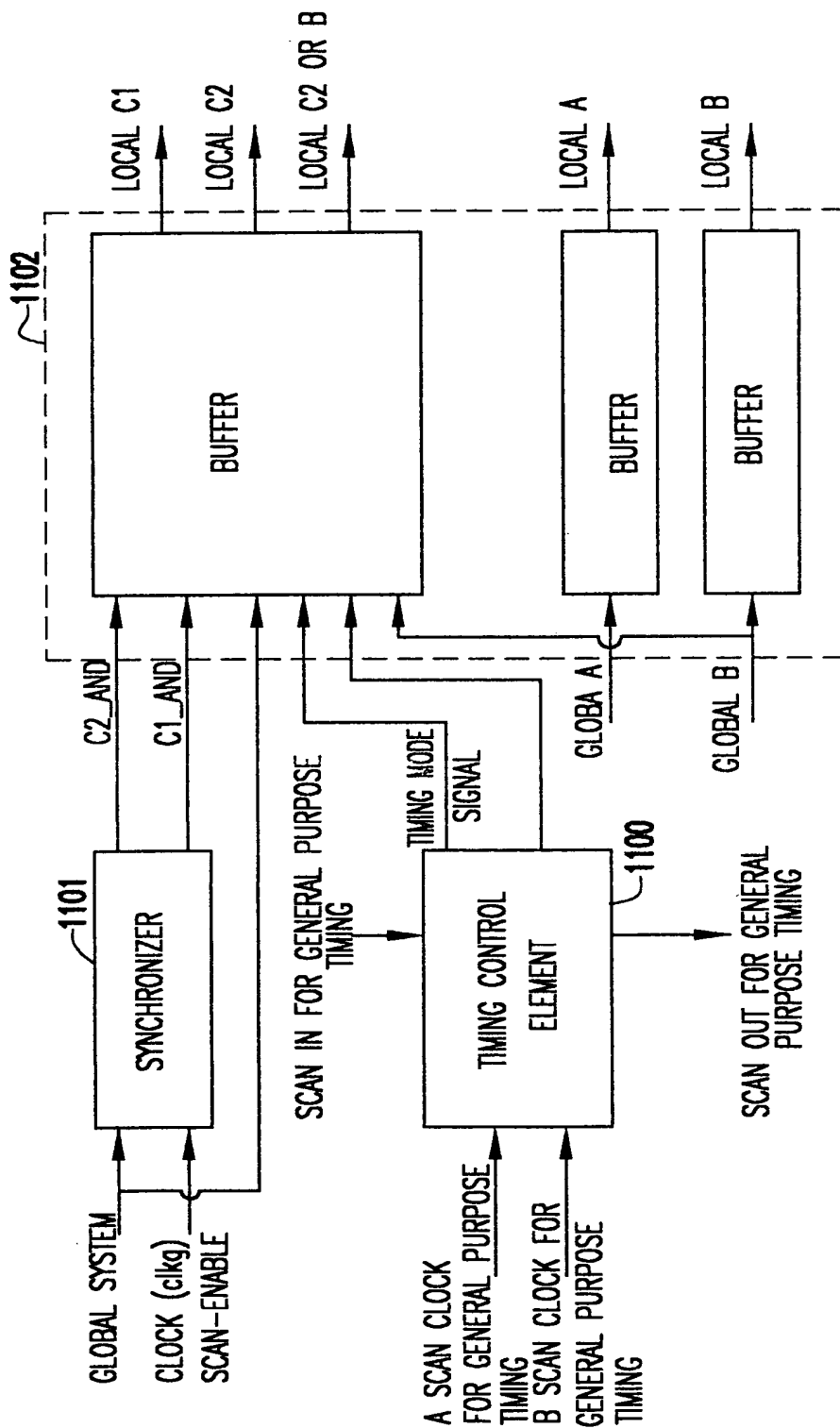


FIG.11



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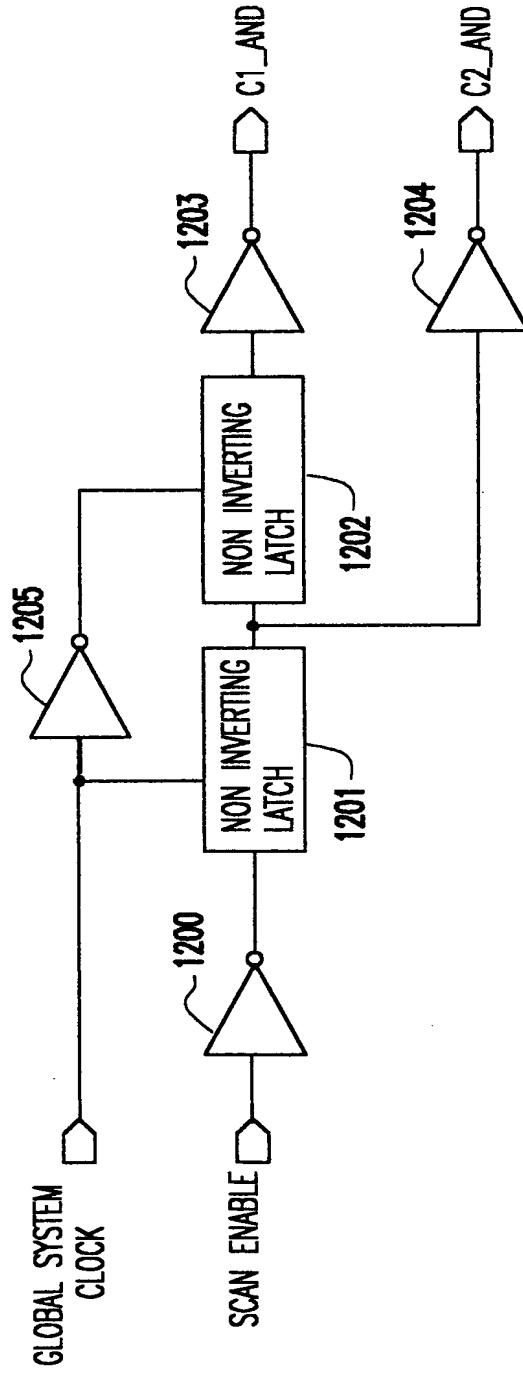


FIG.12

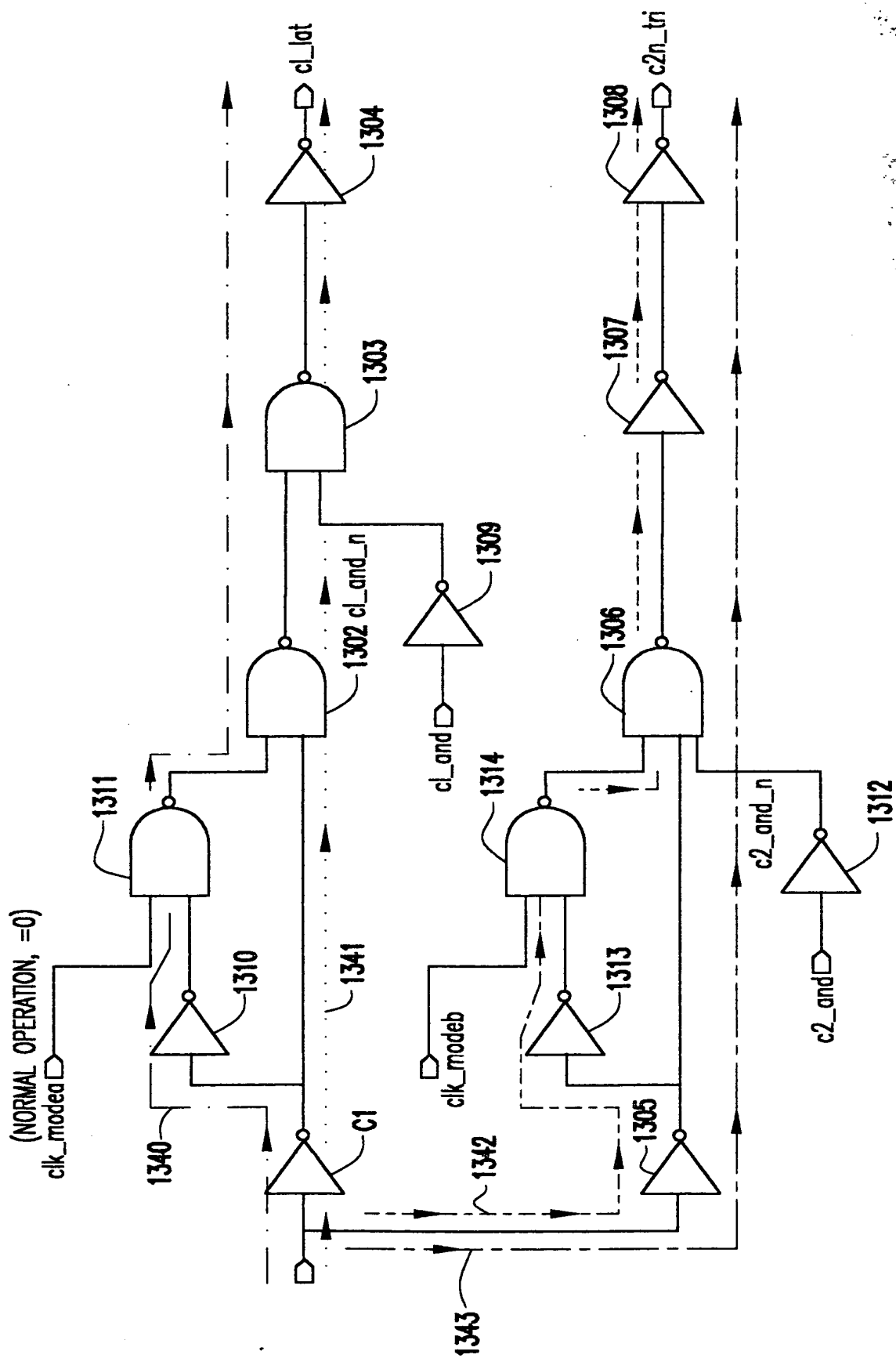


FIG.13

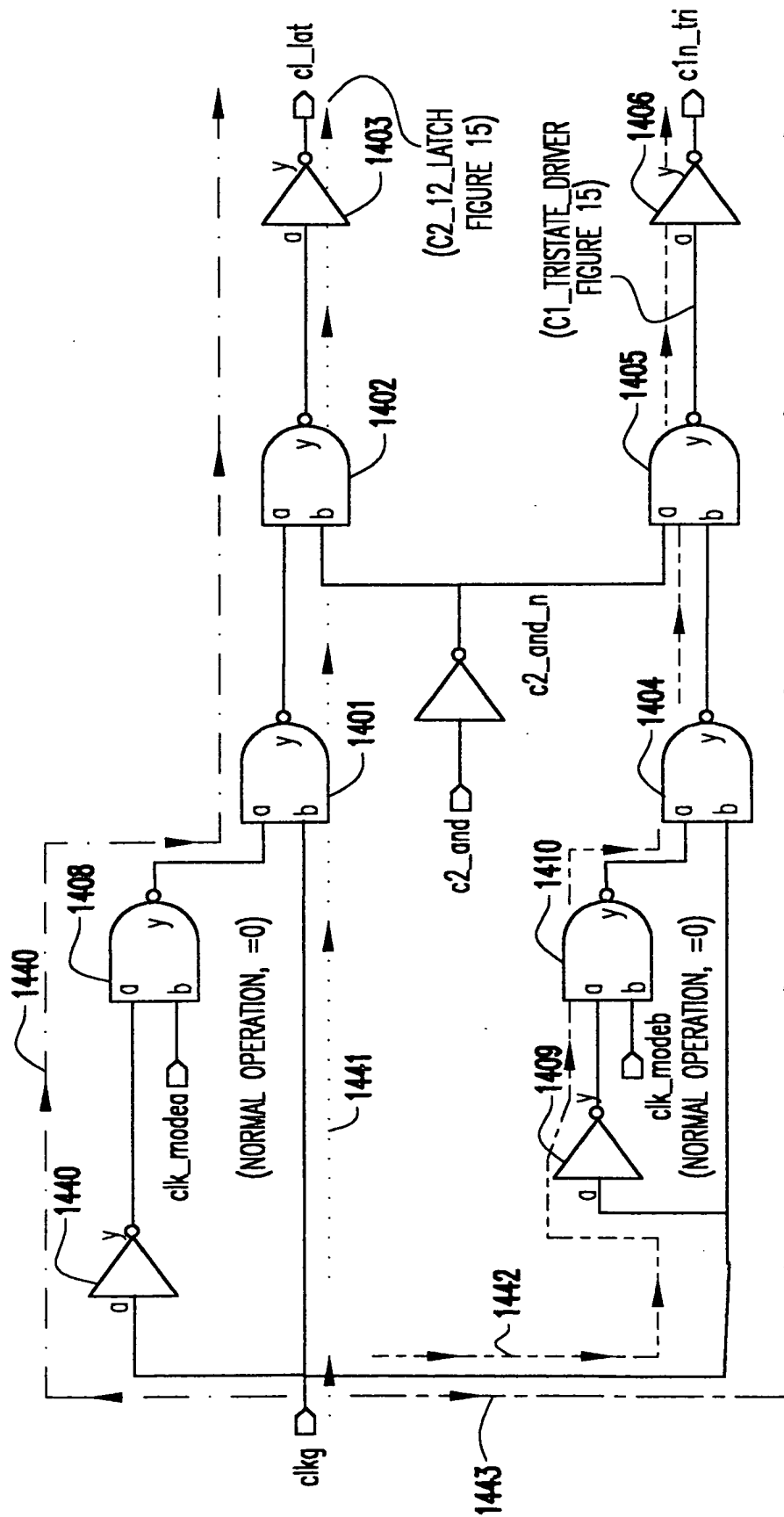


FIG.14

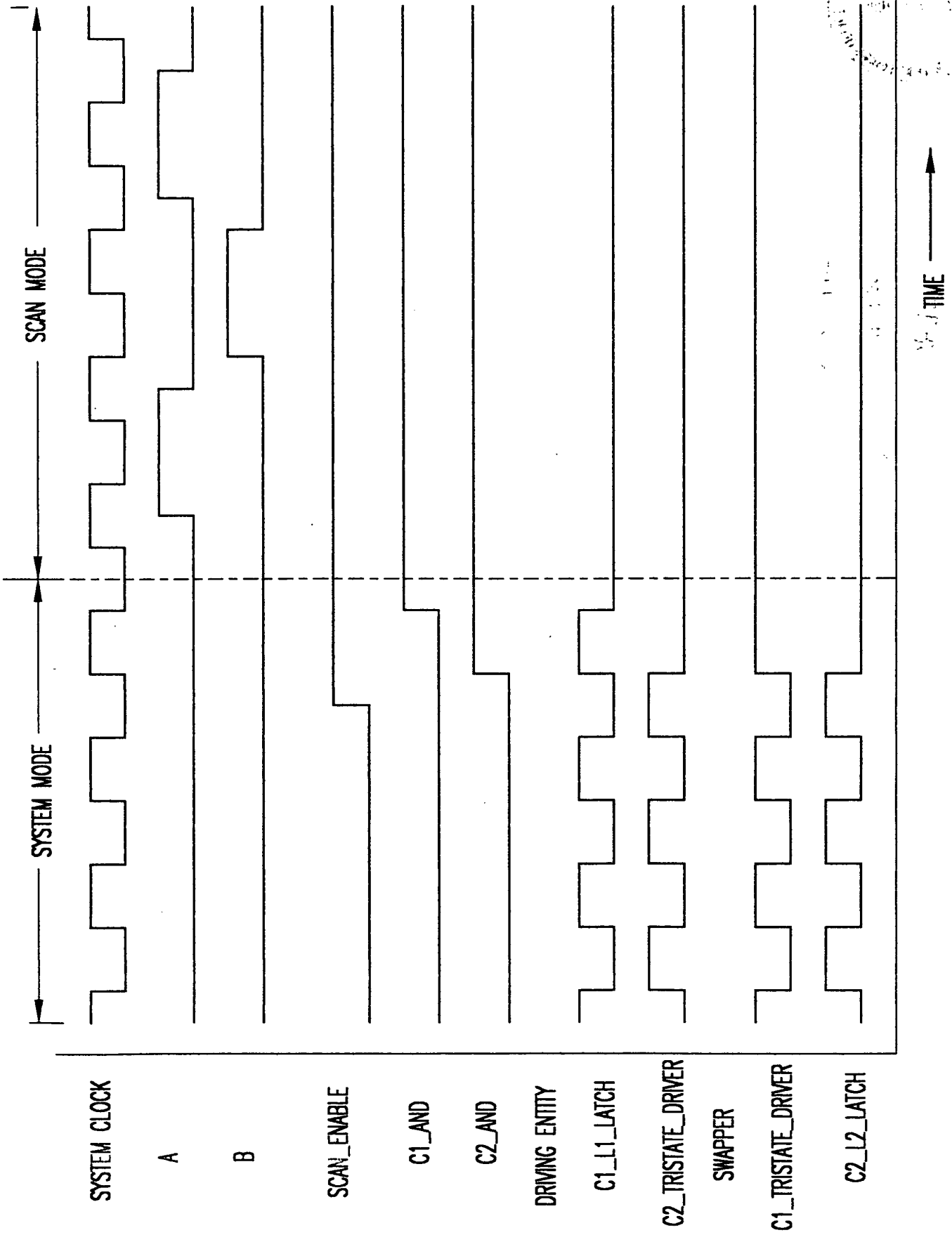


FIG.15